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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/709,677

05/21/2004

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05/23/2008

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EXAMINER

AMRANY, ADI

ART UNIT

PAPER NUMBER

2836

MAIL DATE

DELIVERY MODE

05/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/709,677	BORREGO BEL ET AL.	
	Examiner	Art Unit	
	ADI AMRANY	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-27,30-32,34-37 and 39-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-27,30-32,34-37 and 39-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/6/08; 5/15/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 6, 2008 have been fully considered but they are not persuasive. The limitation of detecting a short circuit has been presented in previous claim drafts (5/21/04; 7/3/06; 10/17/06; 1/12/07; and 7/18/07). The most recent non-final final rejection (October 5, 2007) relied, in part, on Turner and Karappana, which both disclose detecting the presence of a short circuit condition in the architecture. Further, Bosch (from the International Search Report) similarly discloses detecting the presence of a short circuit. While applicants' remarks are directed towards the alleged short-comings of Frey, applicants have not responded to or rebutted to the limitation analysis of Turner or Karappana (claims 1-19 were cancelled instead) or addressed the relevance of Bosch, which is indicated as an X reference in the search report.

Information Disclosure Statement

2. The information disclosure statement filed May 6, 2008 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Foreign reference #9 (EP 0337155) does not contain an English language translation or abstract.

3. The information disclosure statement filed May 6, 2008 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

As indicated in the IDS, there is no available copy of Spanish application P200003143.

4. Further, domestic reference 3 (US 159,257) has not been considered due to its obviously unrelated subject matter. There reference titled "Locking Knob Latches" was issued in 1875 and clearly does not related to detecting short circuits in a dual battery architecture.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 20-27, 30-32, 34-37 and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frey (US 6,232,674) in view of Turner (US 6,646,845).

With respect to claim 20, Frey discloses a system for protecting against short circuit in electric power distribution architecture (fig 1; col. 2, lines 41-45) having a first battery assembly for generating a first voltage level (item 16; col. 2, lines 45-60), a second battery assembly (18; col. 4, lines 17-29) for generating a second voltage level

Art Unit: 2836

that is substantially higher than the first voltage level, a converter coupled between the first and second battery assemblies (item 13), and at least one power distribution unit (item 17), the system comprising:

a module SMM (items 11-12; col. 2, line 61 to col. 3, line 21) operably coupled to:

the converter having an input coupled to the second battery assembly (item 30a) and an output coupled to the first battery assembly (item 30), wherein the converter is adapted to generate a first voltage signal (input to port 28) indicative of an amount of voltage measured at the output that is compared to a first predetermined voltage range of the first voltage level (col. 3, lines 25-53) and to generate a second voltage signal (input to port 27); and

at least one power distribution unit operable coupled to at least one load (col. 2, lines 51-57);

wherein the module SMM is adapted to assess a state of the DC/DC converter and to control at least one power distribution unit to connect/disconnect the at least one load in response to the first and second voltage signals (col. 4, lines 31-47).

Frey does not expressly disclose the module SMM determines the presence of a short circuit condition in the architecture. Turner discloses a system for protecting against short circuits (fig 1; col. 4, lines 1-12; col. 6, lines 18-22) comprising a first battery assembly (item 12; col. 6, lines 43-46) and a module SMM (item 26; col. 7, lines

Art Unit: 2836

14-22, 27-29), wherein the module SMM is adapted to determine the presence of a short circuit condition in the architecture (col. 4, lines 1-12; col. 6, lines 18-22).

Frey and Turner are analogous because they are from the same field of endeavor, namely battery control systems. At the time of the invention by applicants, it would have been obvious to one skilled in the art to combine the voltage measuring system disclosed in Frey with the current measuring system disclosed in Turner in order to more accurately determine the battery status (Turner, col. 8:5-10).

With respect to claim 21, Frey discloses the module SMM (item 12) is adapted to measure a voltage across the battery for comparison to a predefined voltage level in response to receiving at least one of the first voltage signal and the second voltage signal (col. 3, lines 25-53; col. 5, line 1 to col. 6, line 4). Frey and claim 20 both recite that the first battery is directly connected to the input of the converter. Therefore, sensing the input voltage of the converter is exactly the same as sensing the output of the first battery. Applicants' battery assembly is not interpreted to include more than one battery, as there is no support in the specification. The Frey battery assembly is interpreted as the battery and its connecting wires/cables.

With respect to claim 22, Frey discloses measuring the voltage across the first battery and disconnecting the loads when an undervoltage is detected (col. 4, lines 41-47), but does not expressly disclose deriving the voltage from measuring the current of the first battery. Turner discloses the module SMM is adapted to measure an input current across the first battery to determine that the measured voltage across the first

Art Unit: 2836

battery is below the predefined voltage level (col. 4, lines 35-46; col. 7, lines 30-46; col. 8, lines 5-10).

With respect to claim 23, both Frey (col. 4, lines 41-47) and Turner (col. 4, lines 35-46; col. 6, lines 18-31, 46-55) disclose the module SMM is adapted to control the at least one PDU to selectively disconnect the at least one load in response to the module SMM determining that the measured input current is above the predetermined load current. The relationship between current and voltage (higher current results in faster voltage drop) is well known.

With respect to claim 24, Frey discloses that the module SMM controls the second battery assembly to disconnect itself (col. 4, lines 48-54) in response to determining that the measured input current is above the predetermined load current after the module SMM disconnects the at least one load (col. 4, lines 41-47). Frey discloses that the loads are connected in parallel to the first battery (items 16, 17). By disconnecting the two batteries from each other (control device 10a), Frey inherently disconnects the second battery from the load (17).

With respect to claim 25, it would be obvious to one skilled in the art that the Frey system reconnects the loads when the emergency operation is over (col. 4, lines 55-67). Frey and Turner both continuously measure battery voltage and current to detect the next emergency or short-circuit. It is inherent that both Frey and Turner will continue to measure the input current after at least one load is reconnected.

With respect to claim 26, Turner discloses measuring the voltage across each load (col. 6, lines 56-67).

With respect to claim 27, Turner discloses that the measured voltage across the load is one of the factors in determining whether to disconnect the load (col. 6, lines 43-67).

With respect to claims 30-32 and 34-37, Frey and Turner disclose the apparatus necessary to complete the recited methods, as discussed above in the rejections of claims 20-22 and 24-27, respectively.

With respect to claim 39, Frey and Turner disclose the apparatus necessary to complete the recited methods, as discussed above in the rejection of claim 20 and below in the rejection of claims 40-41.

With respect to claims 40 and 42, Turner discloses the module SMM controls the at least one PDU to connect/disconnect the loads via at least one power switch (14; col. 6, lines 46-55).

With respect to claims 41 and 43, Turner discloses measuring an output of the at least one power switch to determine load values of the at least one load coupled to the output of the switch in response to the module SMM controlling the PDU to disconnect the load, and the PDU compares the measured load value to a predetermined range prior to reconnecting the load (20; col. 7, lines 9-22). Turner discloses that the load sense input (20) detects and monitors a change in load voltage during opening/closing of the power switch (14). It would be obvious to one skilled in the art to extrapolate "impedance" values from the voltage values of the load (col. 9, lines 19-49), since it is well known that voltage and impedance values are directly proportional.

Art Unit: 2836

7. Claims 20 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frey in view of Karuppana (US 6,645,908).

Frey discloses the recited limitations, as discussed above, but does not expressly disclose determining the presence of a short circuit condition in the architecture.

Karuppana discloses an electric power distribution architecture (fig 1C, 2A; col. 4, lines 55-57; col. 5, lines 23-35), comprising: a battery (fig 2A, item 102; col. 7, line 57 to col. 8, line 4), a module SMM (fig 1C, item 10; fig 2A, item 100; col. 5, lines 36-49; col. 6, lines 3-12; col. 8, lines 5-65), at least one power distribution unit coupled to at least one load (103-110), wherein the module SMM is adapted to determine the presence of a short circuit condition in the architecture (col. 6, lines 12-20, 38-52) and to control the at least one PDU to connect/disconnect the at least one load.

Frey and Karuppana are analogous because they are from the same field of endeavor, namely battery control systems. At the time of the invention by applicants, it would have been obvious to one skilled in the art to combine the module SMM disclosed in Frey with the internal sensors (20) disclosed in Karuppana in order to more accurately determine the battery status (Karuppana; col. 1, lines 36-43).

8. Claims 20 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frey in view of Bosch (WO 01/2144), from applicants' IDS.

Frey discloses the recited limitations, as discussed above, but does not expressly disclose determining the presence of a short circuit condition in the architecture.

Boesch discloses a dual-battery system comprising means to switch off loads at risk in the event of a detected short circuit (abstract).

Frey and Bosch are analogous because they are from the same field of endeavor, namely battery control systems. At the time of the invention by applicants, it would have been obvious to one skilled in the art to combine the module SMM disclosed in Frey with the short circuit detection disclosed in Bosch in order to protect the loads from a battery failure (Bosch, abstract, lines 3-5).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicants are requested to review the cited references in their entirety, including references provided in earlier rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADI AMRANY whose telephone number is (571)272-0415. The examiner can normally be reached on Mon-Thurs, from 10am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2836

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

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